

## RECORDS OF BUTTERFLY MIGRATION IN EAST AFRICA.

By C. B. WILLIAMS, M.A., F.E.S.

(*Late Entomologist to the East African Agricultural Research Station,  
Amani, Tanganyika.*)

The following records relating to butterfly migration have been sent to me in the course of the last two years and I am taking this opportunity of putting them on record so that they can be available for all students of this subject. No general discussion of the records is given as they will all be dealt with in my forthcoming book on the subject.

I once more ask all readers who have at any time seen flights of butterflies, dragonflies or other insects such as are described below, and who have not put them on record, to publish a full account as soon as possible, or else to let me have the notes for incorporation in a future series of collected records.

Accounts of migration should include the locality, date, and direction of flight, and should always when possible, be accompanied by specimens of the insects themselves. This is particularly important in the case of the small white butterflies in East Africa as there are two or more species which take part in the flights, and they are almost indistinguishable in flight. Each may have their own seasons and routes and unless specimens are available for exact determination much of the value of the record is lost.

In addition to the above information, which is most essential, records should include when possible the direction of the wind, the height and approximate speed of the insects, some ideas of the numbers concerned (*i.e.* dozens, thousands or millions), the time of the day and duration of the flight, and any general note on the weather at the time.

As many specimens as possible should be captured as it is only possible to estimate accurately the proportion of the sexes if a fair number are available. The specimens should be as little damaged as possible, but a single damaged specimen or even a single detached wing is better than nothing at all.

My thanks are due to all who have sent in the records below.

### (1) BUTTERFLY MIGRATING IN NYASALAND IN NOVEMBER, 1927.

Mr. Fadyen informs me that in November, 1927, near Kongeni, Nyasaland, he saw a very big flight of butterflies coming from an easterly direction and travelling west. They rested on avenues of *Cedrella Toona* trees for a short time and then continued their flight

to the west. He writes: "The butterfly was a dull red colour being about  $1\frac{1}{4}$  inches from tip to tip across the wings. It is a very common one," but unfortunately no specimens were sent.

(2) MIGRATION OF WHITE BUTTERFLIES AT MOSHI, N.E. TANGANYIKA.

Mr. C. R. Musson informs me that while living at Old Moshi, about 3,000 feet above sea-level on the eastern slopes of Kilimanjaro, N.E. Tanganyika, in either January or February of both 1926 and 1927, he saw large flights of pale yellowish butterflies flying towards the south-east. On one occasion they were flying by thousands high in the air about seventy feet above the ground from about 9-30 to 11-15 a.m.

In January and February, 1926, *Belenois mesentina* was migrating in great numbers to the S.E. in Nairobi, so that it is very probable that the record in 1926 refers to this species.

(3) WHITE BUTTERFLIES (? *Belenois* sp.) MIGRATING AT MOSHI, TANGANYIKA, IN MARCH, 1928.

Mr. A. E. Haarer reports that about March 24th, 1928, with conditions of drought, the same white butterflies as were migrating in February, 1926 (*Belenois* sp.) were migrating from north-west to south-east but fewer in number and only for about three or four days.

(4) SMALL MIGRATION OF PALE YELLOW BUTTERFLY (? *Catopsilia florella*) IN UGANDA.

Mr. Gerald W. Williams informs me that on August 18th, 1927, at Kowanji, on the north side of Lake Mohasi in South Uganda, he saw a considerable number of "White Brimstone" butterflies (like the English *G. rhamni* but even more pale than the female of that species) steadily crossing the lake at a rate of about six per minute. The lake was at this point about 1,000 yards wide. Several were caught but the flight was very rapid. The flight was limited to a quarter of a mile as they followed the course of a large valley. He observed the flight for three hours but it ceased as soon as the clouds covered the sun, although it was then only 2-30 p.m. The early morning had been dull and overcast. During the flight the wind was gusty and from the N.N.E.

From the description it is very probable that the species was *Catopsilia florella*, but unfortunately no specimens have been received.

(5) MIGRATIONS OF BUTTERFLIES AT KILOSA, TANGANYIKA.

Mr. C. Gillman, Chief Engineer of the Tanganyika Railways, informs me that he saw a migration of white butterflies at Kilosa in

Central Tanganyika in April, 1909. The butterflies were going towards the south-east, against the south-east trade wind which had recently set in. Tens of thousands of them passed during several days.

When shown specimens of *Belenois* spp. and *Catopsilia florella*, which are the only migrants in East Africa which could be described as "whitish," Mr. Gillman said they were undoubtedly the latter, but it is best to recognise that the identification is uncertain after the long lapse of time.

(6) *C. florella* AND *B. mesentina* NEAR KITALE IN FEBRUARY, 1928.

Mr. H. B. Stoneham tells me that near Kitale, Trans-Nzoia, Kenya, from the 1st to 24th February, 1928, there was a migration of *C. florella* to the north, more or less strong, passing in twos and threes. During the last three days, *B. mesentina* was also migrating north in fair numbers.

(7) *B. subeida* (?) NEAR KITALE IN APRIL, 1928.

Mr. Stoneham informs me that near Kitale, Trans-Nzoia, Kenya, there was a migration of *P. subeida* (?) to the north from 8th to 15th April, 1928, in considerable numbers although at times quite leisurely.

(8) *H. misippus* NEAR KITALE IN MAY, 1928.

Mr. Stoneham informs me that near Kitale, Trans-Nzoia, Kenya, there was a migration of *H. misippus* from the 8th to 14th May, 1928, going to the north. After a few days' rest this restarted again on the 28th May.

(9) *C. florella* NEAR KITALE IN MAY, 1928.

Mr. Stoneham informs me that near Kitale, Trans-Nzoia, Kenya, there was a migration of *C. florella* to the south from the 23rd to the 28th May, 1928, in fair numbers.

(10) *Belenois* AT SIKONGE, TANGANYIKA.

Dr. A. J. Keevil informs me that at Sikonge, about forty-six miles due south of Tabora, he saw a migration of "small white butterflies" in 1927 "towards the end of the rains (probably about April)." The migration lasted two, possibly three days and was exactly from east to west.

(11) *Belenois* AT NAKURU, KENYA, IN MAY, 1928.

Mr. A. S. Evans informs me that "on May 24th, 1928, at Alphega, Nakuru, Kenya, white butterflies passed from 10 a.m. to

4 p.m. possibly longer, heading N.5°W.—as far as one could see in all directions, flying low, about 10-15 miles per hour and at a rough guess about four hundred to the acre."

(12) *C. florella* NEAR MOSHI IN MAY, 1916.

Mr. H. B. Stoneham informs me that in May, 1916, he saw a considerable migration of *C. florella* between New Moshi (foot of Kilimanjaro, N.E. Tanganyika) and Same on the Tanga Railway. The direction was due south.

(13) *B. mesentina* NEAR KITALE IN JANUARY AND FEBRUARY, 1926.

Mr. H. B. Stoneham sends me the following details of the large migration of *B. mesentina* in January and February of 1926. The point of observation was twelve miles west of Kitale, Trans-Nzoia, Kenya (to the east of Mount Elgon).

"The migration commenced about mid-day on Saturday, 9th January and proceeded till sundown in a westerly direction. Wind: North to north-west. Besides *B. mesentina* which were in large numbers there were also *C. florella* and possibly other species.

"Soon after dawn on Sunday, 10th January, the migration recommenced and proceeded all day, many thousands of specimens passing, all going in the same direction as before, i.e. west. Wind strong from east most of the day. In the evening, I caught several specimens mostly newly emerged and many in copulation. On 1st February, the migration continued. I went to Kitale, twelve miles to the east, and the migration was very noticeable there. Towards evening, the numbers increased so that at times it looked like driven snow flakes. On 2nd February the migration subsided. During the afternoon of 3rd February, a return migration was noted, individuals streaming back in an easterly direction.

"On 4th February, the return migration of *B. mesentina* increased in numbers and continued till sundown. Direction at first S.E. but during the afternoon the general direction changed to N.E. Wind as before and no rain. On the 5th February, the migration was in full swing all day, but between 2 p.m. there were such millions of them that they looked like falling snow. Later, direction changed to north and then to N.W. Wind as yesterday, but for a short time from north and south. No rain and warmer.

On 6th and 7th, migration continued, but numbers fewer. On 8th, migration was scarcely noticeable. Still no rain and wind as before, but direction turned last day from north to north-east."

(14) *Hypolimnas misippus* NEAR KITALE IN FEBRUARY, 1926.

Mr. Stoneham informs me that during the first three days of February, 1926, *i.e.* during the migration of *B. mesentina* described above (No. 13), there was "a migration, not very strong, of *Hypolimnas misippus*. Direction north, wind moderate to strong from east, turning to west in evening. No rain."

(15) WHITE BUTTERFLIES AT MOMBASA.

Dr. Shircore informs me that about 1916 he saw a flight of white butterflies at Mombasa going to south-east for two days. He estimates from memory that there was about one butterfly to five hundred cubic feet of air space over a belt of perhaps one hundred and fifty to two hundred yards wide. The flight was low, within say fifteen feet of the ground. It was sunshiny breezy weather, and the largest numbers were present during the brightest hours of the day.

It was probably one of the two common species of *Belenois*.

(16) WHITE BUTTERFLIES AT NAKURU, KENYA, IN 1925 AND 1926.

Mr. H. J. Lock informs me that about the end of February or early March, 1925, there was a flight of butterflies, "for the most part white though there were some tinged with yellow mixed with them," at Nakuru flying from about S.E. to N.W. which direction he thought was due to the prevailing wind blowing this way. The flight was not very noticeable for more than two or three days generally between noon and 3 p.m.

In 1926, there was a similar migration about the same time, but in this case from west to E. or S.E. He does not recollect the wind during this flight but notes that a wind in this direction is unusual at this time of year. The days were hot with broken clouds and inclined to thunder.

In 1927, although he kept a look out there was no such flight at Nakuru.

(17) WHITE AND YELLOW BUTTERFLIES AT MOSHI, TANGANYIKA.

Mr. Henry C. Brett of Kibosho, near Moshi, N.E. Tanganyika, informs me that on several occasions during March and April of 1928 he observed butterflies "of fairly large size," of two kinds, one white and one yellow, travelling from west to east across his estate. They passed in very large numbers for hours on end.

The description would well fit *C. florella*.

(18) WHITE BUTTERFLIES AT ARUSHA, T.T. IN DECEMBER, 1925, AND  
JANUARY, 1926.

Mr. I. J. Anderson of Arusha, Tanganyika, sends me the following notes:—

“ During November and December of 1925, we had very heavy rains but towards the end of December right on through January, except for a few days, we had bright sunny weather. As soon as this latter started we noticed an unusual number of the ordinary white butterflies with dark line markings on it flying towards a point a little west of south. Day after day their numbers increased until about the first week in January they formed a perfect cloud. It reminded me of the enormous flocks of parrakeets which one sometimes sees migrating in the dry areas of Australia, but of course their flight was much slower. This dense cloud lasted about three days when it became gradually less, but all through January and February a few stragglers continued in the same direction as the main body. The width of this flight is difficult to tell, but it must have been several miles from east to west. Although many were flying close to the ground the great majority were so high that they were practically invisible with x16 binoculars. They came from a northerly direction and over Mondul Mountain, which is close on 9,000 feet. They showed no inclination to settle, nor did any of us notice any appreciable quantity dying by the roadside.”

(19) WHITE BUTTERFLIES AT NAKURU, KENYA.

Dr. M. Martin of Entebbe tells me that he saw a migration of white butterflies at Nakuru in September, 1923. It lasted practically the whole day and one of the planters told him that it was quite a common occurrence.

(20) MIGRATION OF BUTTERFLIES AT MOA, NORTH-EAST TANGANYIKA  
ABOUT MARCH, 1926.

According to a letter from Mr. T. L. Priestnall about March, 1926, there was a flight of butterflies seen at Moa, on the coast north of Tanga, Tanganyika, by a Mr. Roberts and several others. The flight was first noticed about 4-30 p.m. and was going straight out to sea (i.e. to the east) and was still passing when it was quite dark.

(21) WHITE BUTTERFLIES AT KINANGOP, KENYA, IN JULY, 1927.

Mr. G. G. Gabbett informs me that at the end of June, 1928, he saw hundreds of white butterflies flying more or less to south at Kinangop (about 20 miles from Naivasha) in Kenya.

(22) SMALL WHITE BUTTERFLIES IN ATHI PLAINS, KENYA.

Colonel Meinertzhagen informs me that on one occasion (date uncertain) in the Athi Plains, near Nairobi, he saw a migration of small white butterflies flying from the south-east for nearly a week and so dense that he was able to approach big game behind the screen that they made. The flight was not over 20 feet from the ground.

(23) WHITE BUTTERFLIES IN CENTRAL TANGANYIKA IN JUNE, 1925.

Mr. Andrews informs me that in June, 1925, he saw countless millions of small white butterflies going due east on the Central Line of the Tanganyika Railways about 200 miles from the Coast between Tabora and Dodoma. For about 50 miles the train passed through the swarm.

(24) WHITE BUTTERFLIES AT TUKUYU-RUNGWE, S. TANGANYIKA, IN 1926.

Mr. J. M. Dawson, Government Veterinary Officer, informs me that a flight of white butterflies passed through Rungwe Mission, near Tukuyu [in old maps Neu Langenburg] just north of Lake Nyasa in South-West Tanganyika, early in 1926. He believes that this was part of the big flight that passed through the Nairobi district at the beginning of February, 1926, as the date at which they passed Rungwe "coincided with the date on which they were noticed at Nairobi and the time that might have been taken *en route*."

As far as he can recollect the butterflies were passing from early morning until dusk, but for not more than three days.

(25) WHITE BUTTERFLIES NEAR AMANI, SEPTEMBER 23RD, 1928.

Capt. E. Nicholl, Manager of Kwamkoro Coffee Estate about five miles south of Amani informs me that on September 23rd, 1928, large numbers of small white butterflies had been flying in groups of thirty or more from east to west past his house. He considers that they were the same species (*B. severina*) that was passing in numbers at the end of August, but unfortunately was unable to catch any specimens.

(26) WHITE BUTTERFLIES AT NYERI, KENYA.

Mr. F. J. Briggs informs me that on his estate at Nyeri, Kenya Colony, at an altitude of 6,100-6,800 feet, white butterflies fly in numbers towards the south nearly every year about December, January, or February. Then, with or without a break they reverse direction and return about March towards the north. This is usually taken to indicate the approach of the rains.

(27) WHITE BUTTERFLIES IN SUK DISTRICT IN JULY, 1928.

Mr. P. Booth of the Agricultural Department, Kenya, informs me that on about 21st July, 1928, he saw thousands of white butterflies flying to the S.W. (*i.e.* towards Uganda) in the Suk district of Kenya. They were flying steadily all day at a height of 4-6 feet above the ground just above the bushes.

(28) WHITE BUTTERFLIES NEAR VOI, KENYA, IN 1921.

Mr. D. M. Drury informs me that vast quantities of white butterflies passed from north to south continually between 16th and 18th February, 1922, over Wundanyi Estate near Voi, Kenya, in the Teita Hills at an altitude of about 5,000 feet. On the latter day the direction changed to the reverse, *i.e.* south to north, but he has no record as to how long the reverse flight continued.

(29) WHITE BUTTERFLIES NEAR LEMBENI, TANGANYIKA, IN JULY, 1928.

Mr. C. H. Pook informs me that he saw millions of white and brown butterflies flying along the railway between Same and Lembeni (Tanga Line, N.E. Tanganyika) about 3-4 p.m. on 5th July, 1928, apparently travelling along the line in the direction of Tanga, *i.e.* more or less to S.E., in bright sunny weather. From the fact that *B. severina* was recorded from Moshi late in June and was migrating in numbers in Amani about the 10th July it is almost certain that this is the species concerned.

(30) WHITE BUTTERFLIES NEAR NAIVASHA, KENYA, IN JULY, 1928.

Mr. Pienaar tells me that in early July, 1928, about eight miles from Naivasha on the road to Gilgil about midday he saw hundreds of small white butterflies flying approximately to the east near the ground.

(31) WHITE BUTTERFLIES AT MAKTAU, KENYA, IN DECEMBER, 1928.

Mr. C. E. Dunman informs me that on the 5th December, 1928, he saw a flight of white butterflies passing over Maktau Railway Station (between Voi and Moshi). They were flying approximately from north-east to south-west and were all high in the air, several hundred feet up he estimates, and none down below. Thousands were seen for about 15 minutes between about 2-30 and 3 p.m. and they may have been passing both before and after.

They were seen flying over the top of a small hill and were scarcely visible from down below.

The wind was south-east or east, diagonally with the flight.



(32) WHITE BUTTERFLIES IN UGANDA ON AUGUST 20TH, 1928.

Dr. E. J. Wayland informs me that he saw a flight of butterflies on August 20th, 1928, on the Kampala-Lake Albert Road, Uganda, between Matabi and Kakumiro (that is approximately in latitude  $0^{\circ} 40' N.$  and longitude  $E. 31^{\circ} 10'$  and  $31^{\circ} 20''$ ). The butterflies were flying from east to west along the road against a slight wind and avoiding the bush on either side of the road.

He considers that the species concerned in the flight were the same as those that he saw in a previous flight on June 25th, 1928, but was unable to get any specimens to confirm this.

(The species in the previous flight were *Pinacopteryx* sp. near *vidua* and *Pieris solitica*).

(33) *C. florella* AT SIKONGE, TANGANYIKA, IN NOVEMBER, 1928.

Dr. A. J. Keevil informs me that a migration took place at Sikonge 46 miles south of Tabora, in Central Tanganyika at the end of November, 1928. The flight commenced on November 24th, increased till the 26th and 27th, the numbers then becoming fewer until the 30th, when no more were noticed. On the 7th December there were still many butterflies about but not travelling in any fixed direction. The main migration was almost exactly due east and the weather was fine and sunny with an occasional light shower.

Dr. Keevil sent me three specimens which were all males of *Catopsilia florella*.

(34) *C. florella* IN KENYA IN JANUARY, 1926.

According to Mr. H. Wilkinson, Asst. Entomologist to the Department of Agriculture of Kenya, a correspondent reported that *C. florella* was migrating at Gilgil, Kenya, on 26th January, 1921. The direction was not given but it was said to be "against the wind." The specimens were identified by Canon Rogers.

(35) POSSIBLE IMMIGRATION OF *Synchlœ glauconome* IN KENYA.

Dr. V. G. L. van Someren informs me that in June, 1922, *Synchlœ glauconome* appeared in numbers at Nairobi and about 40 specimens were captured in his garden in one week. He had never seen this species in the district either before or since.

(36) *Belenois mesentina* AND *C. florella* AT KILOSA, CENTRAL TANGANYIKA, IN JANUARY, 1929.

Mr. T. M. Revington sends me the following information from Kilosa, about 150 miles from the coast on the Central Railway line of Tanganyika Territory.

" At noon to-day (25th January, 1929) at Kilosa a great number of common white butterflies, together with a smaller number of yellow butterflies commenced to travel through a gap in the hills through which the railway passes. They appeared to be travelling from the west-north-west to the south.

The yellow butterflies were greatly outnumbered by the white ones but seemed to be travelling with them. There were also other kinds but only a few of them.

The gap in the hills mentioned is the only pass in the mountains, which run roughly north and south. The ' safari ' (travelling) continued until after 2-30 p.m. and then slackened."

Mr. Revington sent three specimens, two of which, the common white species referred to above, were *Belenois mesentina*, both males, and one yellow female of *Catopsilia florella*, presumably the yellow butterfly referred to above.

The direction, to the S.E. quarter, appears to be the usual direction for *Belenois mesentina* in this country but during the whole of January *C. florella* at Amani in N.E. Tanganyika was moving towards the N.E.

In a later letter he adds: " The migration continued for three or four days at approximately the same hours and from the same direction. None flew at a greater height from the earth than about 40 feet and the majority under twenty."

(37) MIGRATIONS OF *C. florella* WITH OTHER SPECIES IN CENTRAL TANGANYIKA IN DECEMBER, 1928, AND JANUARY, 1929.

Mr. H. Musk of the Department of Agriculture of Tanganyika kindly sends me the three following records:—

(1) On 8th December, 1928, near Gwao, about 25 miles south of Singida in Central Tanganyika he passed in a car through a flight of millions of butterflies from 11 a.m. till after 1 p.m. They were flying fast towards the E.S.E. mostly about three feet from the ground. The wind was westerly and mild, the weather sultry, near rain.

He sent four specimens, all of which were males of *Catopsilia florella*.

(2) On 16th January, 1929, at Ishora, about 33 miles west of Singida, he passed through a flight of even greater numbers than the above, from 9 a.m. to 2 p.m. and perhaps later, flying towards the S.E. 6-10 feet above the ground and rather more slowly than the previous record. The wind was mild from S.S.W. and the weather sultry after rain.

The specimens sent to me were three *Catopsilia florella*, two rather small males and one full-sized female; two *Terias* sp., one male and one female, and one wing of a male *Belenois mesentina*.

(3) On the following day, 17th January, 1929, at Singida there was a small flight of a few butterflies towards the N.E., seen from 3-4 p.m., but possibly going on before that. The flight was fast and from 1-3 feet above the ground. The wind mild N.W. and the weather sultry but dry. No specimens were sent but he states that they were the same species as the previous two flights but without the small yellow species, i.e., the *Catopsilia florella* without the *Terias*. He suggests that it was probably part of the flight seen the previous day which is very likely.

(38) *Catopsilia florella* NEAR ARUSHA, TANGANYIKA IN JANUARY, 1929.

Herr von Dechend kindly gives me the following record:—

"From Sunday the 27th January, to Thursday the 31st, I observed a strong migration of many white and a few yellow (lemon coloured) butterflies crossing the Moshi-Arusha road between "Maji ya chai" and Thelmi River and flying due north towards the east side of Meru Mountain.

On 100 yards I counted sometimes as many as 100 per minute. The migration started about 9 a.m. and lasted up till about 5 p.m. Type of country plantations, forests and dry thorn bush country."

I showed him specimens of the chief East African migrants including *Belenois* spp. and *C. florella* and he unhesitatingly identified the latter insect as the one in question, noting the larger size, the presence of the yellow variety, and in addition the very rapid flight.

(39) WHITE BUTTERFLIES AT SIMBA, UGANDA, IN 1922.

Mr. F. R. Buckle informs me that in April or May of 1922 when at Simba, about 40 miles north of the Kagara River in Uganda he met during one morning a flight of hundreds of thousands of small white butterflies moving slowly but steadily more or less to the south. Vast numbers were flying close to the ground and many could be killed by waving a stick in the air. He did not notice the wind direction or to what height in the air the flight reached.

The insect concerned is almost certainly a species of *Belenois*.

(40) *Belenois* sp. IN KENYA IN JANUARY, 1924.

Mr. R. L. Harger gives me the following record: "In January, 1924, I went by ox wagon from Kijabe, down the Kedong Valley, over the Mau Escarpment and past Narok to the Lolgorien goldfields. On reaching the Southern Uasin-Nyero a few fore-runners were

noticed. A couple of days later there was a continuous flight for days of countless millions which continued over part of the Loita plains and while I traversed the Mara Valley and Sureya Escarpment and Plateau. I was travelling slowly at ox pace. It was again *Belenois* apparently coming from the N.E. and going roughly S.W. In the Southern Loita and Mara areas I noticed very many in copulation and have often wondered in what range of country the eggs were deposited."

(41) WHITE BUTTERFLIES NEAR MOUNT ELGON, UGANDA, IN JUNE, 1928.

Mr. R. C. Fisher, Veterinary Officer, informs me that about 2 p.m. on 10th June, 1928, he noticed what seemed to be a constant stream of butterflies moving in a south-westerly direction from the neighbourhood of the hills below Sifi, Mount Elgon, Uganda, towards the Siroko River. The flight appeared to be somewhat erratic, but the above was the general direction. The wind was in general blowing in a westerly direction although not strong or constant. The weather previously had been very wet but about the time of the flight there had been several dry days.

The butterflies were mainly white with some light green ones and other varieties in small percentage. The flight appeared localised to a somewhat narrow area and unfortunately he was not able to obtain any specimens. It was estimated that about 20 to 100 butterflies were passing per minute.

(42) *C. florella* IN KENYA IN FEBRUARY, 1929.

Mr. Chiappido Rebuffo informs me that on the 9th February, 1929, when he was travelling by train from Voi, Kenya to Moshi, Tanganyika, the train passed for about one hour through thousands of white butterflies which appeared to be moving approximately to the N.E. The time was about 11 a.m., and the flight had ceased before the train reached Maktau Station which is about half way between Voi and Moshi.

When shown specimens of *C. florella* and *Belenois* spp., Mr. Rebuffo unhesitatingly identified them as belonging to the former species.

(43) WHITE AND YELLOW BUTTERFLIES IN NYASALAND IN JANUARY, 1919.

Mr. E. H. Lilford reports as follows from Karonga, Nyasaland:—

"On the 26th January, 1929, I saw fair numbers of white butterflies and a few yellow ones going S.W. by west. A slight wind of force 2 was coming from the N.W. Again on the 29th there were some more stragglers going south with a slight wind from the S.E. This is on the Misahui district, North Nyasa."

(44) *Belenois mesentina* AT LUSHOTO, TANGANYIKA, IN MARCH, 1929.

Mr. T. L. Priestnall informs me that a flight of white butterflies passed through Lushoto (in old maps Wilhelmstal) in the West Usambara Hills, N.E. Tanganyika. He first noticed them on 9th March at 11 a.m. "flying very high." On the 10th they were lower and in much larger numbers. The flight was from "N.E. to S."

Four specimens were sent, two captured on the 9th and two on the 10th. They were all *B. mesentina* and all males.

(45) WHITE BUTTERFLIES AT GILGIL, KENYA, IN FEBRUARY, 1929.

Mr. S. W. Greenway informs me that on the 6th February, 1929, at Gilgil, near Naivasha in the Rift Valley, Kenya, he saw a flock of some thousands of small white butterflies going to the S.S.E. between 10 and 11 a.m. The flock was noticed passing for ten minutes but may have continued longer. They were flying mostly low but a few up to 50 feet from the ground. The day was hot and dry and almost calm, in the middle of the dry season.

No specimens were obtained but the insect concerned is almost certainly a species of *Belenois*.

(46) *Catopsilia florella* AND PERHAPS OTHER BUTTERFLIES NEAR ARUSHA, TANGANYIKA, IN JANUARY-FEBRUARY, 1929.

Mrs. E. G. Fotheringham informed me on 27th January, 1929, that a migration of butterflies was taking place at Ngare Nairobi, on the west slopes of Kilimanjaro.

The direction of the flight was from S. to N. and was at its maximum at noon, but usually all had disappeared by 2 p.m. She describes the butterflies taking part in it as follows: "The majority the ordinary white ones, cream, large black and yellow, black and blue and large orange colour."

Later (15th February) she added that the flight was in thousands and lasted from 27th January to 8th February. On the 15th they were fighting again. The wind was from the east.

Nine specimens were enclosed and said to be "from the flight." They were as follows:—

4 *Catopsilia florella*, 1 pale male, 2 yellow females, 1 pale but too damaged to determine sex.

1 *Belenois severina* male.

1 *Mylothris rupelli*.

1 *Danaüs chrysippus alcippus*.

1 *Papilio demodocus*.

1 *Junonia clelia*.

From this it is almost certain that the main migration must have been *C. florella*. The other species may have been taking part, but until more definite information is obtained it would be safer to look upon their presence as accidental.

(47) *Belenois* sp. NEAR BOMBO, UGANDA, IN MARCH, 1928.

Mr. N. S. Haig informs me that at Bukalasa, near Bombo in Buganda, a Province of Uganda, and about 36 miles due north of Kampala, he saw large numbers of white butterflies passing in a westerly direction. This appeared to continue for some days and, as far as he can recollect, took place at the beginning of March, 1928 (writing in May, 1928). The weather was then dry, as the rains were late in coming this year. The prevailing wind was from E. to W., with the flight.

The species concerned was certainly a *Belenois*, as he says it was the same species as that concerned in the flight at Mbale in May and this was definitely *B. severina*.

(48) *Catopsilia florella* AND OTHERS AT DODOMA, TANGANYIKA, IN JANUARY, 1929.

Mr. D. R. Grantham, of the Geological Survey of Tanganyika Territory, sends me the following observations made at Dodoma in the central part of that country.

"I noticed a flight some days previous to our making notes, probably on the 9th January [1929], but did not pay special attention to it.

"During the 12th January, there was a continuous flight from the time the morning wind died down, about 9 a.m., till dusk. The butterflies were scattered and not in close flights. They were travelling eastwards without any sign of stopping or settling, while the wind was light and easterly, i.e. against them.

"I estimated that about 10,000 passed between my house and a point 200 yards north of it during the day. Dr. Teale's estimate was very considerably higher. Over what area they were thus travelling I cannot say; we observed at least half a mile in width and presumably it was many miles.

"On the 13th the flight started again when the wind died down. Fewer and more other colours, but whites predominating. Flight more erratic, more hovering and settling. Occasionally the wind was not east, but the direction of flight was not varied. I have no notes for several days as the flight was not so distinct, though many butterflies were on the move in the same general direction.

17/1/29: Flight continued but direction southwards.  
18/1/29: Flight steady eastward in fair numbers.  
20/1/29: Eastwards from 11 a.m. to 4 p.m. rather fewer.  
21/1/29: Flight less but continuing.

After this it gradually died out, some days a few would be seen going eastward."

Mr. Grantham sent the following specimens:—

2 *Catopsilia florella*,  
2 *Telacolus evenina*, Wallgr.  
2 *Herpaenia eriphia*, Godt.

The two latter species were identified by Mr. N. D. Riley.

#### (49) WHITE BUTTERFLIES AT MOMBASA, KENYA.

Mr. F. B. Butler informs me that on several occasions in the last few years he has seen small white butterflies passing in thousands over the island and harbour of Mombasa. The flights are nearly always towards the south and are usually about the end of February, which is the season that he goes fishing for a fish locally known as "Felussi." The last occasion on which he saw them was in February, 1929, when they were passing in hundreds over the water from just above the surface to a height of about one hundred feet, all in a southerly direction.

The insect referred to is almost certainly a species of the genus *Belenois* and probably either *B. mesentina* or *B. severina*.

#### (50) WHITE BUTTERFLIES NEAR KITALE, KENYA, IN MARCH, 1929.

Mr. G. H. Hunt informs me that he saw two flights of white and yellow butterflies on the slopes of Mount Elgon, in the Kitale district of Kenya. The first was on the 8th March, 1929, when they were flying in hundreds about midday to the N.W. mostly low down and not very fast. This was at "Jackson's Farm," about 20 miles west of Kitale.

The second flight was on the 29th March at "Hunt's Farm" about 15 miles N.W. of Kitale. This direction was more or less the same but the numbers were fewer.

I showed Mr. Hunt specimens of *Belenois* and *Catopsilia florella* and he thought that it was the latter species but could not be certain.

#### (51) *Catopsilia florella* AT KILINDINI IN MARCH, 1912.

Mr. Simmonds kindly gives me the following record: "I remember another flight, mostly of *Catopsilia florella*, across the creek at

Kilindini in East Africa. I think from south to north, about the end of March, 1912. I was on the "Carisbrook Castle" at the time. They were being attacked by swallows and bee-eaters."

(52) *Belenois* sp? AT MOROGORO IN MARCH, 1929.

Mrs. C. J. Ruggles-Brise kindly gives me the following record from Morogoro, Tanganyika Territory: "I observed an almost daily migration during March [1929] of the common white butterfly. It is very similar in general appearance to the British Cabbage White. They always flew west to east."